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数理解析研究所講究録1234

Tosio Kato's Method and Principle for Evolution Equations in Mathematical Physics

京都大学数理解析研究所

2001年10月

Preface

The papers in this volume were written by the speakers at the international workshop "Tosio Kato's Method and Principle for Evolution Equations in Mathematical Physics", which was held at Hokkaido University on 27, 28, and 29 June, 2001.

Professor Tosio Kato, a professor emeritus of Mathematics at University of California, Berkeley, was a leading mathematician in the theory of evolution equations and the mathematical theory of the Schrödinger equation. His achievements are so great that we can safely claim that he was one of the founders of these theories and had set frameworks and standards for later generations. For instance, nowadays, it would be impossible for those who study mathematical fluid mechanics to be a specialist without reading his papers.

It was therefore a deep sorrow to hear of the news of his untimely death on October 2, 1999, which meant that his world of mathematics ended to advance all of sudden, and his papers of such perfect rigor and beauty would never appear. Then, some months later, we were told that Professor Heinz O. Cordes, Professor Kato's old friend, salvaged two of his unpublished manuscripts from an old personal computer in Professor Kato's study. On a kind permission by Mrs. Mizue Kato (Professor Kato's wife), these two manuscripts are included in the present volume of RIMS Kokyuroku. Although they are not complete in Professor Kato's standard (he was a perfectionist), they contain a new functional framework and interesting proofs of the existence of solutions of the Euler equations for incompressible inviscid fluid motion. We therefore came to the conclusion that they must be released to the scientific community in some form or other for future studies. The workshop was planned in order to make public these manuscripts left by Professor Kato as well as current works by those who remember and admire Professor Tosio Kato.

Though the workshop was carried out as a workshop of RIMS, Kyoto University, it would not be materialized without support from the Department of Mathematics of Hokkaido University. It is, in this regard, our pleasure to thank the department, in particular Professors Y. Giga and T. Ozawa, for the invitation to hold the workshop in Sapporo and their cooperation during the workshop. Support from Prof. Kenji Yajima should also be acknowledged. Invitation to some of foreign speakers were made possible by a kind aid from Inoue Foundation for Science.

Finally, on behalf of all the participants of the workshop and many Japanese mathematicians who appreciate Professor Kato's method and principle, let us thank Professor Cordes for his enthusiastic effort in salvaging Professor Kato's last manuscripts, in making them readable documents, and his coming all the way to Sapporo to give a lecture in memory of Professor Kato in Berkeley.

Editors
Hiroshi Fujita
S. T. Kuroda
Hisashi Okamoto

Tosio Kato's Method and Principle for Evolution Equations in Mathematical Physics

京都大学数理解析研究所共同利用研究集会

研究代表者　岡本　久
（京大・数理研）

記

日時：　2001年6月27日（水）10:40 —
6月29日（金）17:30

場所：　北海道大学 理学部5号館大講義室

Program

June 27th (Wed)

10:40–11:25　W. A. Strauss (Brown Univ.)
"Nonlinear instability of dispersive waves"

11:25–12:10　H. O. Cordes
"With Tosio Kato at Berkeley"

14:00–14:45　K. Ohkitani (Kyoto Univ.)
"Comparison between the Boussinesq and coupled Euler equations in two dimensions"

14:45–15:30　Y. Giga (Hokkaido Univ.)
"On the two-dimensional nonstationary vorticity equations"

16:00–16:45　K. Masuda (Meiji Univ.)
To be announced

16:45–17:30　H. Fujita (Tokai Univ.)
"Variational inequalities and nonlinear semi-groups applied to certain nonlinear problems for the Stokes equation"

June 28th (Thu)

10:40–11:25 J. T. Beale (Duke Univ.)
"Discretization of layer potentials and numerical Methods for water waves"

11:25–12:10 Y. Shibata (Waseda Univ.)
"On some stability theorem of Navier-Stokes equation in 3 dim. exterior domain"

14:00–14:45 H. Kozono (Tohoku Univ.)
"Asymptotic behaviour and net force for the Navier-Stokes flows in exterior domains"

14:45–15:30 Short Communications 1
H. Okamoto (Kyoto Univ.), K. Tanaka (Waseda Univ.)
K. Choe (Seoul National Univ.)

16:00–17:30 Short Communications 2
T. Abe (Waseda Univ.), M. Chae (Seoul National Univ.)
J. Kato (Hokkaido Univ.), O. Sawada (Hokkaido Univ.)

June 29th (Fri)

10:40–11:25 K. Yajima (Univ. Tokyo)
To be announced

11:25–12:10 S. T. Kuroda (Gakushuin Univ.)
"Resolvent formulas, special and general"

14:00–14:45 T. Ozawa (Hokkaido Univ.)
"Scatting problem for nonlinear Schrödinger and Hartree equations'

14:45–15:30 T. Ogawa (Kyushu Univ.)
"Analytic smoothing effect for the Benjamin-Ono equations"

16:00–16:45 D. Chae (Seoul National Univ.)
"Local existence and blow-up criterion of the Euler equations in the Besov and the Triebel-Lizorkin spaces"

16:45–17:30 M. Cannone (Université de Marne-la-Vallée)
"Asymptotic stability of solutions to the incompressible Navier-Stokes equations with external forces"

Tosio Kato's Method and Principle for Evolution Equations in Mathematical Physics

研究集会報告集

２００１年６月２７日～６月２９日

研究代表者　岡本　久(Hisashi Okamoto)

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